Oxadiazon Summary

Uses

- Oxadiazon is registered for commercial use on turf grown on golf courses (~77% of total use) and in apartment/condominium complexes, parks, athletic fields, playgrounds, and cemeteries (~12% of total use). In addition, oxadiazon is used on sod farms and on conifer nurseries and landscapes (i.e. industrial sites, ornamental, roadside plantings, woody, ornamental shrubs, vines and trees, and herbaceous ornamentals)
- Oxadiazon is a pre-emergent or early post-emergent oxadiazole herbicide used to control grassy weeds (e.g. goosegrass and crabgrass) and broadleaf weeds in turf and ornamentals.
- Annual usage is approximately 249,000 pounds on 52,000 acres. Oxadiazon is used primarily in the South (~71%) and predominantly on golf courses (~77%).

Health Effects

- In humans, acute exposure to oxadiazon can cause irritation to the skin, eyes and mucous membranes.
- In both subchronic and chronic studies, effects on the liver were consistent among the species tested (rat, dog, mouse).
- Oxadiazon is classified as "likely to be carcinogenic to humans" based on studies that showed an increase in the incidence of liver tumors in two species (mice and rats) following chronic exposure to oxadiazon.

Human Health Risks

Dietary Risk

- There are no food or feed, or anticipated food or feed uses for oxadiazon. The Registrant is not supporting any tolerances for oxadiazon in the United States. Existing tolerances are in the process of revocation. Likewise, there are no Canadian or Mexican tolerances for oxadiazon.

Drinking Water Risk

- There is a potential drinking water risk of concern for infants and children chronically exposed to oxadiazon via drinking water from surface water sources.
- The cancer risk exceeds the Agency’s level of concern for lifetime exposure to oxadiazon in surface and ground water.
- Acute exposure to oxadiazon in ground and surface water is not of concern.

Residential Risk

- The oxadiazon label indicates that the purchase, storage and application of this pesticide is limited to commercial nursery, turf and landscape personnel, and the product is not available to homeowners. Post-application residential exposure scenarios include apartment complexes, golf courses, and playgrounds.
- In all risk scenarios, residential exposure to oxadiazon was of little or no concern.

Aggregate Risk (combined risks from food, residential, and water)

- The Agency did not perform an aggregate risk assessment as part of this reregistration review for oxadiazon, because the conservative estimate of risk from chronic exposure to drinking water already exceed the level of concern.
- There are no remaining food uses.

Occupational Risk

- The Agency has determined that there are potential exposures to occupational mixers, loaders, applicators, or other occupational handlers during standard use-patterns associated with oxadiazon.
- Dermal route is the route of consequence.
- There is potential non-cancer risk associated with low-pressure handwand application of wettable powder formulations.
- None of the evaluated occupational scenarios have cancer risks that exceed the Agency's level of concern.

Environmental Fate and Transport

- Environmental fate studies indicate that oxadiazon persists in the environment bound to organic matter.
- In clear, shallow bodies of water, oxadiazon not bound to organic matter may be degraded by sunlight. Alternatively, oxadiazon is defined as a light-dependent peroxidizing herbicide (LDPH), which suggests that toxicity is greater in the presence of light.
- Studies indicate that after application to soil, oxadiazon remains near the surface, and can be transported via runoff to nearby surface water bodies.
- Leaching from surface soils to groundwater is expected to be low or negligible, unless the soil is very porous.
- Since this stable compound can bind to particulate and organic matter, oxadiazon residues can accumulate in sediments at the bottom of bodies of water.
- Oxadiazon may accumulate in aquatic organisms such as fish; however, as observed in studies using bluegill sunfish, the tendency toward bio-accumulation can be offset by a rapid rate of removal.

Environmental Risks

Avian Risk

- Chronic exposure may result in risk to birds that feed on plants and grass (e.g. ducks, geese).
- Exposure from the granular formulation was evaluated because birds may be exposed to granular pesticides through ingestion when foraging for food or grit.
- All scenarios for the granular formulation resulted in no acute risk to birds.

Aquatic Species Risk

- Chronic exposure to oxadiazon may result in risk to freshwater and estuarine/marine fish and aquatic invertebrates.
- Oxadiazon residues can accumulate in sediments and increase the potential for chronic risk to aquatic organisms that live in or on the sediment. In order to better understand this potential risk, the Agency is requiring appropriate sediment toxicity testing (acute and chronic) on this compound.
- Enhanced toxicity through exposure to sunlight may increase risk to aquatic organisms that inhabit small, shallow water bodies.
- The herbicidal properties of oxadiazon also suggest the potential for acute toxicity to aquatic plants and the possibility of alterations to aquatic habitats. This can have an indirect effect on aquatic populations by decreasing plant cover.

Mammalian Risk

- Acute exposure to birds and mammals presents minimal risk.
- Chronic exposure could result in risk to mammalian herbivores and insectivores.

Non-target Plants and Animal Risk

- Oxadiazon exposure may present a risk to non-target aquatic organisms.
- The EPA is in the process of determining if oxadiazon presents a risk to endangered aquatic species (fish and invertebrates).